KAROLINSKA INSTITUTET DANDERYDS SJUKHUS
Enheten för Obstetrik och Gynekologi

SMOKING AND PREGNANCY

with special reference to preterm birth
and the feto-placental unit

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Disputationen kommer att ske på engelska

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SMOKING AND PREGNANCY,
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ABSTRACT

Objective: To study maternal smoking in pregnancy in relation to preterm birth, placental abruption and perinatal mortality in pregnancies with placental abruption, and to pulse wave characteristics in fetal aorta.

Methods: Two cohort studies with data on single births obtained from the Swedish Medical Birth Registry (N=311 977 and N=795 459, respectively). A case control study of very preterm birth (including 295 smokers and 295 non-smokers, respectively), with information retrieved from patient records. A clinical study of 34 smokers and 34 non-smokers in gestational age 31 to 40 weeks, where pulse wave measurements in the fetal aorta were made with an echo-tracking ultrasonic equipment. Pulse wave characteristics were analysed in relation to gestational age and smoking habits

Results: There was a dose-dependent relation between maternal smoking and preterm birth (<37 gestational weeks), both in very preterm (≤32 gestational weeks) and moderately preterm births (33-36 gestational weeks). Exclusion of pregnancies with smoking-related pregnancy complications did not essentially change the result. The association was stronger in spontaneous births compared to induced births. In very preterm birth, maternal smoking was a dose-dependent risk factor for preterm labour and probably also for "idiopathic" labour (i.e., after excluding cases with infection, conisation of the cervix, hydramniosis, major uterine and fetal anomalies). Maternal smoking dose-dependently increased the risk of very preterm birth caused by late pregnancy bleedings (placenta praevia and placental abruption), and probably also of very preterm birth caused by preterm premature rupture of membranes. Maternal smoking was a dose-dependent risk factor for placental abruption and for perinatal deaths in pregnancies with placental abruption. For perinatal death, the risk was slightly higher in term births compared to preterm births. During gestation, pulse wave velocity increased in smokers but not in non-smokers. Mean incremental velocity did not change during gestation in smokers, but increased in non-smokers.

Conclusions: The studies demonstrated the fact that maternal smoking is a modest risk factor for preterm birth, is a risk factor for spontaneous labour in very preterm birth, and is a major risk factor for placental abruption and perinatal death in pregnancies with placental abruption. The finding of alterations of pulse wave characteristics during gestation may be a sign of increased vessel stiffness in smokers, and an indication of a possible influence of maternal chronic smoking on the feto-placental circulation. The results emphasise the need of further campaigns against smoking among women.

Key words: Smoking, Preterm birth, Very preterm birth, Onset of delivery, Placental abruption, Perinatal death, Pulse wave, Vessel stiffness, Echo-tracking system.

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